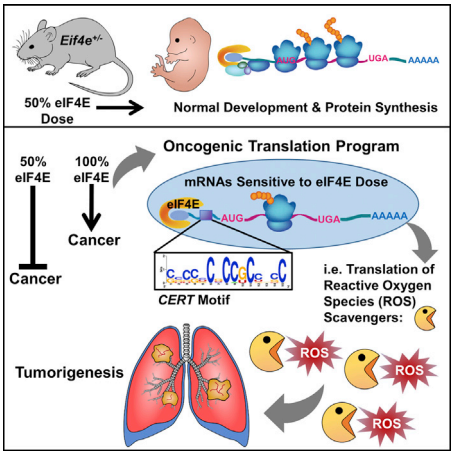
In This Issue

Cell



Tapped Translation Stymies Cancer

TRUITT ET AL., PAGE 59

Reduced levels of the translation initiation factor eIF4E are compatible with normal mammalian development but preclude the ability of cells to transform and for tumors.

Natural Genetic Variation Shapes Drug Responses

SOCCIO ET AL., PAGE 33

Single-nucleotide polymorphism alters the genome-wide binding of the transcription factor PPARγ, impacting the response of mice to antidiabetic drugs and affecting individual risk for metabolic disease in humans.

AIM'ing 2 Prevent Cancer

MAN ET AL., PAGE 45

The cytosolic DNA sensor AIM2 regulates stem cell proliferation in the intestinal mucosa in an inflammasome-independent fashion, contributing to a decrease in the likelihood of colorectal cancer development.

Inhibiting a Midlife Crisis

SLACK ET AL., PAGE 72

Ras inhibition is implicated in the longevity that arises from reduced insulin/IGF-1 signaling. In adult flies, pharmacological inhibition of Ras signaling using the Mek kinase inhibitor, trametinib, extends lifespan, revealing a new potential target for midlife anti-aging interventions.

Ago Gives RNA a Makeover

SALOMON ET AL., PAGE 84

Argonaute proteins reshape how oligonucleotides find, bind, and dissociate from complementary nucleic acid sequences. By re-writing the rules, Argonautes allow oligonucleotides to serve as specificity determinants with thermodynamic and kinetic properties more typical of RNA binding proteins.

Density, Not Distance, Defines Domains

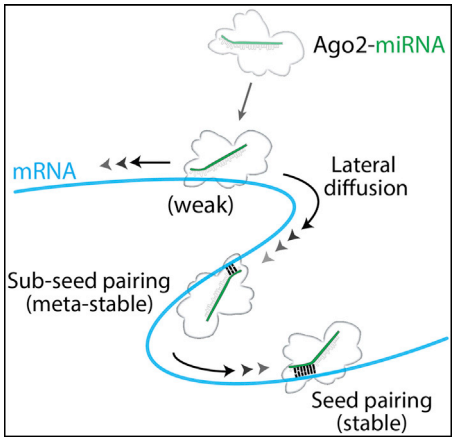
HSIEH ET AL., PAGE 108

Mononucleosome resolution mapping of chromosome folding in yeast reveals self-associating domains similar to those found in other organisms. But they are far shorter, with domain size being scaled by gene number rather than by linear distance.

Three Easy Rules for Finding the Right Partner

LANGEN ET AL., PAGE 120

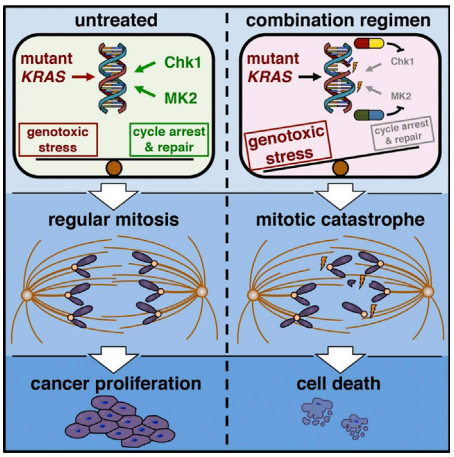
Live imaging and data-driven computational modeling in the fly visual system reveal three simple rules that are sufficient to generate the complex wiring pattern of photoreceptor neurons.



Skimming along in RNA Silencing

CHANDRADOSS ET AL., PAGE 96

Argonaute identifies miRNA targets by scanning potential target RNAs using one-dimensional diffusion while probing for sites complementary to a small segment of the miRNA seed; it only remains stably associated at sites complementary to the full miRNA seed.



PreCISE Combinations against Cancer

DIETLEIN ET AL., PAGE 146

PreCISE, a new platform that reliably captures synergic drug interactions from large-scale cell-line-based screens, shows that simultaneous inhibition of the cell-cycle-checkpoint kinases Chk1 and MK2 effectively eradicates KRAS-mutant cancer cells directly isolated from patients and in distinct Kras-driven murine tumor models.

Instinctive Feeling for Learning

GORE ET AL., PAGE 134

Neurons in the basolateral amygdala that mediate responses to intrinsically rewarding or aversive stimuli also elicit learned responses, indicating that associative learning is funneled through innate behavioral circuits to assign positive or negative emotions to neutral sensory stimuli.

Antibody Stalks the Flu

WANG ET AL., PAGE 160

The glycan composition of the Fc region of anti-influenza antibodies changes following vaccination, with sialylated Fc glycan abundance relating to the quality of the vaccine response and production of high-affinity antibodies against the conserved stalk of the influenza HA.

PhenoGraphic View of Complex Data

LEVINE ET AL., PAGE 184

The PhenoGraph algorithm robustly partitions high-parameter single-cell data into phenotypically distinct subpopulations, aiding the study of complex tissues and disease cohorts. Applying PhenoGraph to a pediatric acute myeloid leukemia dataset revealed a recurrent population of leukemic cells with variable cell-surface markers but consistent signaling dynamics that mimicked normal hematopoietic progenitors.

Hunting Down Elusive Phospho-His

FUHS ET AL., PAGE 198

Sequence-independent monoclonal antibodies that specifically recognize histidine phosphorylation sites allow identification of histidine kinase substrates and functional studies of this posttranslational modification with immunological, proteomic, and biological assays.

Translational Control under the Microscope

WU ET AL., PAGE 211

Two-photon detection of single RNAs binding to individual proteins in live cells enables quantitative analysis of binding events in different cellular compartments, unveiling a mechanism for translational control in neurons.

Predictive Lipidomics

KÖBERLIN ET AL., PAGE 170

Combining lipidomics with genetic perturbations in immune cells reveals the logic of inter-lipid regulatory structure and enables the functional assignment of lipids to different steps of Toll-like receptor signaling. Moreover, quantitative lipidomics alone can predict the inflammatory response of patient-derived cells.